

Water and Development

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 - Micro and nano-pollution abatement (new treatment steps)
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 - Co-operation models

Global situation

- Population development, Cities of the future
- Economic development HIC, MIC, LIC (100, 10 , 1 USD/d)

Global situation

- Regional aspects
 - RBM
 - Coastal areas
 - Climatic situation
- Climate change: abatement and adaptation
 - Urban
 - Marine, rise of sea level
 - Renewable energy
 - Climate gas abatement (CO₂, CH₄ x 22, N₂O x 320)

Global situation

- Agriculture - food - water nexus
 - Water consumption versus use
 - Rain fed versus irrigated agriculture
 - Nutrient problem (resource, pollution, erosion)
 - Loss of species and eco-systems
 - Global distribution of food production and consumption
 - Nutrition habits and consequences
- Water - energy nexus
 - Storage of energy
 - Waste heat disposal

Global situation

- Human right on safe drinking water and sanitation
 - Political problem (legal, organisational, ethical)
 - Hygienic problem
 - Economic aspects
 - Adaption of Technology to local situation
- Human resource development
 - Lack of expertise at all levels
 - language problem (national, professional, interdisciplinary)

European legal situation

- EU WFD:
elaboration of all annexes, harmonisation of in stream standards,
priority substances
- EU UWWD conflict between BAT and “good” status,
micro-pollutants
- EU Sludge Directive:
 - conflict between waste, water and soil protection legislation
(recycling, reuse etc.)



European legal situation

- EU IED (IPPC): resource policy
- REACH as source control: Micro-pollutants, nano-particles

European legal situation

- EU CAP, diffused pollution, marine eutrophication
 - Nitrate directive not enough
- EU Resource policy (recycling and recovery, sludge)
 - Link to waste legislation
- EU Flood Directive (erosion abatement)
 - in urban areas increase of impervious surfaces is faster than climate change consequences

Conclusions

- The European water legislation can be classified as the most developed worldwide.
- The implementation is on the way but in EU member states the levels of compliance is quite different – there are a number of problems to be solved in the (near) future maybe some amendments will be necessary especially with the regulatory framework (EU and member states)
- Harmonisation of EU Waste Water and Waste legislation remains a challenge for future EU resource policy
- The priority substances policy in EU may strongly affect Waste water and sewage sludge management options.

Conclusions

- The global situation is a real challenge in many respects even technological solutions for many problems have been developed. (until 2050 another 3-4 Bil. People need water supply, 80% of waste water is not treated, urbanisation is rapidly proceeding)
- Water supply is about one generation ahead of sanitation and water protection. Lack of water resources in agglomerations is proceeding.
- There is no universal solution:
local lack of human capacity is the most limiting factor for progress in adequate water management
adaptation to local situation is a key for sustainable solutions

Conclusions

- Waste and water management both need adapted legislation and implementation policy, they are linked in several aspects:
 - waste disposal via surface waters
 - local landfills pollute ground water,
 - Resource management (recycling of valuable waste water compounds)
 - Sanitation concepts have to include water protection and waste management
 - Public participation is urgently needed and is linked to income of population >> ~1 €/inhabitant/d
- Sanitation systems on household level are under development with a cost of 5 ct/Inh./d (EAWAG and others) for poor settlements.

Final remarks

The global challenges are:

- Rapid urbanisation: lack of local water resources
- Increase of hygienic risks and water pollution
- Lack of human capacity (education, corruption)
- Poverty inhibits public participation
- Increasing need for food (global aspect), linked to water pollution and abstraction by agriculture

National and international professional associations are key players for implementing adequate policy.